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THE PROGRESS OF SCIENCE

*THE UNITED STATES COAST AND
GEODETIC SURVEY AND ITS
EARLY SUPERINTEND-
ENTS*

THE centenary of the organization of the United States Coast and Geodetic Survey was fittingly celebrated in Washington last spring and the proceedings have now been issued in a volume which forms an interesting memorial of the celebration and of the

great work accomplished by the survey since its foundation in 1816. The program consisted of three public sessions and a dinner. The former were held in the auditorium of the New National Museum, where fifteen addresses were given on the different phases of the survey's activities and on the relation of its work to other scientific bureaus of the government.

The superintendent of the survey, Mr.



FERDINAND RUDOLPH HASSLER.

E. Lester Jones, presided at the public sessions, and the opening address was made by Mr. William C. Redfield, secretary of commerce, the department of which the survey is now a bureau. At the banquet the president of the United States made one of the addresses. Others were by the secretary of the navy, the secretary of commerce, the minister from Switzerland, and the former superintendent of the survey, Dr. T. C. Mendenhall.

The address of Dr. Mendenhall and some of the other addresses give interesting reminiscences of the early work of the survey and its first three superintendents, portraits of whom are here reproduced by the courtesy of the superintendent of the survey. Ferdinand Hassler, born in Switzerland, trained in the best schools of Europe and practised in geodetic work, came to the United States in 1805, bringing with him a fine library of over 3,000 volumes and a collection of technical instruments such as had never before crossed the ocean. He was later appointed acting professor of mathematics at West Point and, through his friend and countryman, Albert Gallatin, was introduced to Jefferson, who had recommended to the Congress a survey of the coasts. Hassler demanded and received a salary equal to that of the head of the department to which the new bureau was assigned. It is said that the president objected, saying "your salary would be as large as that of my secretary of the treasury, your superior officer," and that he replied: "Any president can make a secretary of the treasury but only God Almighty can make a Hassler."

Hassler was sent abroad in 1811 to purchase the necessary instruments and standards of measurement but was detained in England as an alien enemy. When he returned, in 1816, the Coast and Geodetic Survey was organized, and geodetic, topographic and hydrographic work was begun. Owing to lack of appropriations by Congress, work was abandoned for twelve years, when Hassler was placed in charge of

work on weights and measures, and in 1832 again assumed the duties of superintendent of the survey, which he conducted with admirable skill until his death in 1843.

Hassler was succeeded as head of the survey by Alexander Dallas Bache, a great grandson of Benjamin Franklin, whose scientific aptitudes and diplomatic skill he inherited. Graduating from the West Point Military Academy, he had attained distinction as a scientific man of originality and power, and was recommended as Hassler's successor by the scientific societies and institutions of learning. His services were continued for twenty-five years until his death in 1867; they carried forward and enlarged in important directions the work begun by Hassler.

Benjamin Peirce, the distinguished mathematician, who had conducted the longitude operations of the survey during the latter years of Bache's administration, succeeded him as superintendent, a position which he held until the age of sixty-five years, while retaining his professorship at Harvard University. The picture of Peirce shows him at the blackboard. He is said once at a meeting of the National Academy of Sciences to have spent an hour filling the blackboard with equations, and then to have remarked "There is only one member of the Academy who can understand my work and he is in South America." Under Peirce a chain of triangles extending across the continent was planned covering the whole country by a trigonometrical survey and joining the systems of the Atlantic and Pacific coasts.

We may hope that the next three superintendents of the Coast and Geodetic Survey will be men so distinguished in science as Hassler, Bache and Peirce. If this is not the case we should surely enquire into the reason. Is it because the men do not exist, or are we less competent to manage the scientific bureaus now than was the case in the earlier part of the nineteenth century? We can not believe that the human germ plasm has changed in the



ALEXANDER DALLAS BACHE.



BENJAMIN PEIRCE.

course of two or three generations, and if we do not have the men, it is because we do not select and train them. It is equally our fault if such men are not placed in charge of the scientific work of the government.

*THE NEW YORK MEETING OF
THE AMERICAN ASSOCIATION
FOR THE ADVANCEMENT OF
SCIENCE*

THE first of the greater convocation-week meetings of the American Association for the Advancement of Science and its affiliated societies will be held in New York City during the last week of the present month. It has been arranged that there will be held hereafter once in four years successively in New York, Chicago and Washington, meetings at which it is planned to bring together all the national scientific societies and, so far as possible, all the scientific men of the country. There will meet in New York, counting the sections of the association, more than fifty separate organizations devoted to the advancement of science, and there has not been in the history of the world a meeting of this magnitude. When the association last met in New York City ten years ago there were about five thousand members, the attendance was over two thousand, and there were nearly a thousand papers on the program. The present membership of the association numbers about eleven thousand, and the number and size of the affiliated societies has increased in proportion.

The opening session, presided over by Dr. Charles R. Van Hise, of the University of Wisconsin, will be held at the American Museum of Natural History on the evening of December 26, at which time the address of the retiring president, Dr. W. W. Campbell, director of the Lick Observatory, on "The Nebulæ" will be delivered. The registration headquarters will be at Columbia University, and most of the meetings of the sections and of the sci-

entific societies will be held there, though there will be meetings in a number of the educational and scientific institutions of the city.

Each of the separate societies and sections is arranging sessions of interest and importance, and, as the program to be issued at the time of the meeting will doubtless fill more than a hundred pages, it is difficult to select any part for special mention. There is to be a scientific exhibit and conversazione at Columbia University, which is being organized under the charge of some fifteen different committees. There will also be a special chemical exhibit and conversazione at the American Museum of Natural History. It is expected that a joint meeting of physicists and chemists will be held at the City College with a discussion on "The Structure of the Atom and the Constitution of Matter." The four great national engineering societies, which have their headquarters in New York City, plan to hold a special meeting and a reception afterwards to those engaged in work relating to engineering. The Committee of One Hundred on Scientific Research will consider a number of important reports. The American Society of Naturalists will hold a symposium on "Biology and National Existence." Public lectures will be given by Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research, and by Professor A. A. Noyes, of the Massachusetts Institute of Technology, and chairman of the committee of the government on the supply of nitrogen.

These are only a few of the events which will make the meeting of interest quite unparalleled. It is certain that men of science will make special efforts to be present, not only for the interest and profit that they will find in the meeting, but also to contribute their share to the organization of science in the United States, and to impress on the general public the dominant place that science holds in modern civilization.

The meeting will not only be important to those concerned with research,